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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,816	11/22/2002	Canan Uslu Hardwicke	120365	9642

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GENERAL ELECTRIC COMPANY
GLOBAL RESEARCH CENTER
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EXAMINER	
VERBITSKY, GAIL KAPLAN	
ART UNIT	**PAPER NUMBER**
2859	

DATE MAILED: 10/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .	Applicant(s)	
	10/065,816	HARDWICKE ET AL.	
	Examiner	Art Unit	
	Gail Verbitsky	2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-29 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-29 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

A) Paragraph [0024] in page 6 is missing,

B) EXAMPLE in paragraph [0034] has not been described.

Appropriate correction is required.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "electrically conducting material extends beyond the edge" as stated in claims 4 and 12 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claim 2 is objected to because of the following informalities: units of measurement of thermal strain are missing. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

> art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 2, 4, 12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In this case,

Claim 2: the particular thermal strain and units of its measurements, as stated in claim 2, has not been described in the specification.

Claims 4, 12: the "electrically conducting material extends beyond the edge" as stated in claims 4 and 12, has not been described in the specification.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 2, 4, 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In this case,

Claim 2: the claim language is confusing because it is not clear what particular value of the thermal strain is being claimed.

Claims 4, 12: the claim language is confusing due to the reason stated above in paragraph 5.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 3, 5, 8-11, 13-17, 23, 25-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Article: "Thin film temperature sensors for gas turbine engines: problems and prospects" by Budhani et al. [hereinafter Article].

Article discloses a device in the field of applicant's endeavor. Article teaches to deposit thin film thermocouple (electrically conducting films/ dissimilar materials Pt/Rh/ thermocouple legs) onto an insulator/ dielectric (first electrically non-conducting film) comprising NiCoCrAlY and aluminum oxide/ AL2O3, the insulator remains dielectric and adhered when placed onto a substrate of a blade (component) during the entire cycle of measurement. The device measures change in property, such as a temperature of the blade by generating an electrical potential between the thermocouple legs (by definition of thermocouple). It is inherent, that, in order the thermocouple operate properly, both thermocouple legs join at some point to form a thermocouple (hot) junction, and otherwise, inherently, spaced apart. It is inherent, that thermal coefficients of expansion of all the films are selected so as to ensure that the films remain adhered to each other during heating/ measurements.

For claim 3: the device also comprises a second insulation aluminum oxide growth/ coating.

With respect to claims 17, 23, 25-27: the method steps will be met during the normal operating of the device stated above.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 4, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Article in view of Good et al. (U.S. 5912759) [hereinafter Chapman].

Article discloses the device as stated above in paragraph 9.

Article does not explicitly teach the limitations of claims 4, 12.

Good teaches the device wherein an electrode (electrically conducting film) layer extends beyond a dielectric layer.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the electrically conducting film, disclosed by Article, extend beyond the insulating/ dielectric layer, as taught by Good, so as to provide/ extend an electrical conduction of the signal to an evaluating device.

12. Claims 6, 7 and 18, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Article in view of EP0908713A1 [hereinafter EP].

Article discloses the device as stated above in paragraph 9.

Article does not explicitly teach that a second electrically non-conducting layer (insulator/ dielectric) disposed on/ coating the thermocouple legs, as stated in claim 6, and a third dielectric film disposed between the thermocouple legs, as stated in claim 7.

For claim 6: EP teaches in Fig. 9i a device comprising a (second) protecting dielectric/ insulative (alumina) coating/ film 68 coating the thermocouple legs. Inherently, that in such a structure, the thermocouple legs 36 and 40 will be sandwiched between two dielectric films.

For claim 7: as shown in Fig. 5 and paragraph [0019], the thermocouple legs 36, 40 are laterally disposed and electrically isolated from each other and coated/ separated by a (third) protecting dielectric layer 68.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to dispose a second (third) electrically insulative film on top of the thermocouple, as taught by EP, so as to protect the thermocouple from contamination in a harsh environment, in order to provide more stability and thus, accuracy of measurements.

With respect to claims 18, 24: the method steps will be met during the normal operation of the device stated above.

12. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Article in view of Prior Art as stated by Applicant in page 8 of the specification [hereinafter Prior Art].

Article discloses the device as stated above in paragraph 9.

Article does not explicitly teach the particular nozzle and means of deposition of the components as stated in claim 19.

Prior Art teaches that using OhmCraft and Sciperior direct writing apparatuses will satisfy the particular deposition requirements as required by the present application.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use OhmCraft or Sciperior, as taught by Prior Art, for deposition the thermocouple, disclosed by Article, so as to provide a reliable method of deposition, known in the art, which allows to deposit a desired mixture at desired conditions, in order to provide desired thermocouple characteristics, and thus to provide a desired stability and accuracy of measurements.

13. Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Article and Prior Art as applied to claim 19 above, and further in view of Smialek et al. (U.S. 5275670) [hereinafter Smialek].

Article and Prior Art disclose the device as stated above in paragraph 12.

Smialek discloses a device in the filed of applicants' endeavor, the device can be attached to a surface of a gas turbine to measure its temperature. The device comprises thermocouple legs (films) that can be annealed in a CVD furnace at temperature 1400^0C (heating) in order to provide homogenization of a coating and thus, to minimize instability. Particularly, the thermocouple is deposited onto a substrate by E-beam heating and CVD, and then post coating diffusion (annealing/ heating) treatment is applied (entire col. 5). It is inherent, that the heat treatment is done before

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the method of deposition of the thermocouples, disclosed by Article and Prior Art, as taught by Smialek, so as to provide a reliable method of deposition, known in the art, which allows to deposit a desired mixture at desired conditions, in order to provide desired thermocouple characteristics, and thus to minimize instability to ensure accurate measurements.

14. Claims 28, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Article in view of Chapman et al. (U.S. 6568848) [hereinafter Chapman].

Article discloses the device as stated above in paragraph 9.

Article does not explicitly teach a method of communicating temperature signal (link), i.e., RF, as stated in claims 28-29.

Chapman teaches that a temperature signal can be transmitted by RF.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the method of signal transmission, disclosed by Article, with an RF signal transmission, as taught by Chapman, because both of them are alternate types of signal transmissions which will perform the same function, of transmitting the temperature signal, in order to be evaluated, if one is replaced with the other.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in the PTO-892 and not mentioned above disclose related devices and methods.

It is not possible to apply the prior art of record to claim 2 due to the reason stated above in paragraphs 5-7.

Any inquiry concerning this communication should be directed to the Examiner Verbitsky who can be reached at (703) 306-5473 Monday through Friday 8:00 to 4:00 ET.

Any inquiry of general nature should be directed to the Group Receptionist whose telephone number is (703) 308-0956.

GKV

Gail Verbitsky
Patent Examiner, TC 2800

September 29, 2003